material has to be purchased abroad the cost of production will rise accordingly.

This seems a very good opportunity for State assistance, since at present it is to the interest of no individual manufacturer to assist in the development of the new type of ware. It is therefore pleasing to learn that the Committee of the Privy Council for Scientific and Industrial Research has made a substantial grant towards the capital outlay for an experimental factory where the conditions necessary for the successful manufacture of hard porcelain can be studied on a large enough scale to reproduce manufacturing conditions. Once the necessary conditions have been established, the manufacture of hard porcelain will probably interest a great many potters, and this idea has probably led the Pottery Manufacturers' Association to bear a proportionate part of the estimated cost of maintenance. Instead of working slavishly on Continental lines it will probably be far more rational to introduce as few radical changes as possible, so that the supreme skill and traditional experience of our craftsmen may be utilised to its maximum. In this way it is quite likely that a new kind of hard porcelain will be evolved, which will unite the good qualities of the Continental with those of the British porcelain.

B. M.
J. W. M.

THE COMMONWEALTH INSTITUTE OF SCIENCE AND INDUSTRY.

THE scheme for the establishment of a Commonwealth Institute of Science and Industry, of which we gave an account in our issue of March 9, is described by Prof. Orme Masson in an interesting article in the Melbourne *Argus* of January 22. Prof. Masson points out that, just as Lord Roberts pleaded in vain the military necessities of the nation, so the warnings of men like Sir Henry Roscoe, Sir William Ramsay, and Sir Norman Lockyer, as to the consequences of the neglect of science, were disregarded before the war. After the scheme for the development of scientific and industrial research, under a committee of the Privy Council, had been put forward about a year ago, Mr. Hughes, the Prime Minister of Australia, determined to do as much—and more—for the Commonwealth, with the view of making the country independent of German trade and manufacture when the war is over. Following the example of the British Science Guild ten years ago, he appointed a committee representing State scientific departments, universities, and industrial interests to prepare a scheme; and within a few days the committee had produced the draft already published in our columns.

The proposed Institute is to be governed by three directors, one of whom will be selected for proved ability in business, finance, and organisation; while the two others will be scientific men of similar high standing and reputation. This combination, devoted wholly to the work, should be able efficiently to conduct affairs and operations having for their object the union of science with industry. The directors are to be assisted by an advisory council composed of nine representatives of primary and secondary industries and of science; and these representatives are to seek information, advice, and assistance from specialists throughout Australia.

The first function of the Institute will be to ascertain what industrial problems are most pressing and most likely to yield to scientific experimental investigation; to seek out the most competent men to whom each such research may be entrusted; and to arrange for their having all necessary appliances and assistance. The Institute is also to build up a bureau of industrial scientific information, which shall be at the service of all concerned in the industries and manufactures of the Commonwealth. Its third main function will be to erect, staff, and control special research laboratories, the first of which will probably be a physical laboratory somewhat on the lines of our National Physical Laboratory.

The scheme cannot be brought into operation until it receives the sanction of the Commonwealth Parliament, after the return of Mr. Hughes from his visit to England. In the meantime, the Federal Government has appointed a temporary advisory council and provided the money necessary to enable it to make a beginning with the organisation of industrial scientific research and the collection and dissemination of scientific information bearing on Australian industries. According to Press reports, Mr. Hughes said, before leaving Australia, that the Government is prepared to spend up to 500,000*l.* upon the establishment of the scheme; and if the matter is taken up in this large-minded spirit the Commonwealth will have made the best possible provision for the industrial and commercial struggle which must come after the declaration of peace.

NOTES.

PROMOTERS of the proposal to put the hands of timepieces forward by an hour during certain months of the year are now advocating the adoption of this principle of "Daylight Saving" by deception on the grounds of national economy in fuel and light. The scheme has been before the public for many years, and has been rejected by Parliament on more than one occasion. It has not received the approval of a single scientific society of any importance, and only one or two scientific men have given it any support. Yet Lord Salvesen made the astounding assertion, in the *Times* of March 31, that the Daylight Saving Bill "is supported by substantially the whole intelligent opinion of the country." He evidently believes that "intelligent opinion" upon time-standards is not to be found in the views of experts, but in the resolutions of town councils, district councils, chambers of commerce, and like bodies, who want to pretend that during a prescribed period every year the hour of seven o'clock is really eight, and so for other hours. It is usually understood that people cannot be made sober by Act of Parliament, yet it is seriously suggested that they should be made to rise earlier by a legalised plan of national deception. We have condemned this ridiculous measure whenever it has been brought forward, and dealt with it in detail in an article in Nature of May 11, 1911 (vol. lxxxvi., p. 349). A correspondent suggests that we should reprint this article, but we doubt whether the corporations who want Parliament to do for them what they could do for themselves by changing their habits would be convinced by any appeal to authoritative opinion. They might not be in favour of altering temperature standards during certain months of the year, so that in the summer 80° shall be called 70° by Act of Parliament, in order to pretend that the weather is not really so hot as the thermometer indicates, yet the principle which they adopt so cheerfully is precisely the same. If they understood the meaning of time-standards so well as they know those of length, weight, and temperature, the "Daylight Saving" scheme would long since have passed into the limbo of forgotten things.

The enterprise of the *Times* in the issuing of an "Imperial and Foreign Trade Supplement," to be continued monthly, is both commendable and timely. The purpose is to bring enlightenment to the British producer and merchant, and to induce them to support measures sound in policy and method with a view to enable them to compete on advantageous terms, both at home and abroad, with their foreign rivals, especially those of Germany. A frank, well-informed, and unprejudiced discussion of the intricate problems involved, having always the welfare of the home consumer in mind, can result in nothing but good. An instructive article is contributed by Sir Philip Magnus on the value of science in its application to commerce and industry, in which the economic success of Germany and the results of her peaceful, penetrating efforts throughout several decades are ascribed to the effective school training, which has not only enabled the citizens to develop in their own country new and profitable industrial undertakings, but also to establish themselves in a dominating commercial position in other countries. Drastic changes are urged in respect of the organisation of our education, not necessarily on German lines, throughout all its grades, but especially in the training given in our universities and technological schools, which is compared very unfavourably with that available in similar German institutions, and with the number of students engaged therein in operations involving specialised scientific research. There is also an important article by Sir Algernon Firth on British trade policy, in which reference is made to the recent great commercial conference held in the Guildhall, and to the approval given to the demand that the Empire should produce within its own borders all that it requires from its own soil and factories, and that the Government should be urged to provide larger funds for the promotion of scientific research and training. Only the barest allusion is made, however, to this necessity in communications received from numerous correspondents throughout the country, the chief stress being laid upon fiscal restrictions.

There is still no news of Sir Ernest Shackleton's ship *Endurance,* but that need not increase the anxiety as to her safety, as, owing to the unfavourable ice season, her return may be delayed until the middle of April. The *Aurora* was towed into Port Chalmers, New Zealand, on Monday, April 3. It appears that on May 6, 1915, a violent gale tore the vessel from her moorings, and that she was then carried with the ice to the north. The rudder was crushed on July 21, and the vessel was not able to emerge from the ice until March 1 4last last, when it was in a badly damaged condition. Whether the *Aurora* will be fit to return to the Ross Sea in the next Antarctic summer appears doubtful. The fact that she had to be towed during the last part of her voyage to New Zealand was due to the loss of her rudder, though a jury rudder was rigged up. The cautious remarks attributed by the cable to Mr. Stenhouse, the chief officer of the *Aurora,* suggest, however, doubt as to whether, in his opinion, the *Aurora* will be available. He is reported to have expressed the hope that the staff of the *Aurora* will return as a relief party, but he says nothing as to the return of the ship herself. We must hope, however, by next week to have news of the *Endurance,* and of the seaworthiness of the *Aurora.*

Dr. M. O. Forster, F.R.S., the chairman of the Technical Committee of British Dyes, Ltd., and Mr. J. Turner, the manager of the works, have been offered, and have accepted, seats on the board of the company, and Dr. J. C. Cain has been appointed chief chemist of the new works at present under construction at Dalton, Huddersfield.

We regret to announce the death, on April 4, in his eighty-first year, of Sir John Gorst, F.R.S., vice-president of the Committee of Council on Education from 1895 to 1902, and the first president of the Educational Science Section of the British Association.

Mr. W. B. Hardy, Sec.R.S., Admiral Sir H. B. Jackson, K.C.B., F.R.S., and Sir G. A. Smith, Principal and Vice-Chancellor of Aberdeen University, have been elected members of the Athenæum Club under the rule which empowers the annual election of a certain number of persons "of distinguished eminence in science, literature, the arts, or for public services."

The day lectures at the Royal Institution after Easter include :—Prof. C. S. Sherrington, Harvey and Pavloff; Dr. T. M. Lowry, optical research and chemical progress; Sir Ray Lankester, flints and flint implements; Prof. W. H. Bragg, X-rays and crystals (the Tyndall lectures); Prof. H. S. Foxwell, the finance of the great war; Sir James G. Frazer, folk-lore in the Old Testament. The Friday evening discourses include :—Sir J. M. Davidson, electrical methods in surgical advance; Colonel E. H. Hills, the movements of the earth's pole; Prof. C. G. Barkla, X-rays; Mr. E. Clarke, eyesight and the war.

Dr. H. R. Mill reports in the *Times* of April 3 that while the average rainfall for March at Camden Square for fifty years is 1·75 in., this year the total rainfall, including melted snow, up to a few hours before the end of the month, was 4·67 in. The record of rainfall at Greenwich Observatory for the past 100 years includes only one instance of a 4-in. fall in March, 4·05 in. having been measured in 1851. A search through the numerous rainfall records kept in and near London back to the beginning of the eighteenth century has failed to show any March with as much as 4 in. of rain.

The annual general meeting of the Ray Society was held on March 23, Prof. W. C. McIntosh, president, in the chair. The report of the council showed a considerable loss of membership owing to the war, and stated that two volumes for 1915, the "Principles of Plant-Teratology," vol. i., by Mr. W. C. Worsdell, and the "British Fresh-water Rhizopoda and Heliozoa," vol. iii., by Mr. G. H. Wailes, had been issued to the members, and also the "British Marine Annelids," vol. iii., part 2, by the president, being one of the issues for the present year, for which the second and concluding volume of "Plant-Teratology" is also in preparation. A work on the "Trematode Parasites of British Marine Fishes," by Dr. William Nicoll, and one on the "British Diatomaceæ," by Mr. George

West, had been accepted for publication. Prof. McIntosh was re-elected president, Dr. F. DuCane Godman treasurer, and Mr. John Hopkinson secretary.

The annual general meeting of the Chemical Society was held at Burlington House on March 30, Dr. Alexander Scott, president, in the chair. A discussion took place with regard to the removal from the list of those honorary and foreign members who are alien enemies, and it was decided to refer the matter to the council for further consideration. It was with great pleasure the president announced that the following donations had been made to the research fund:—(*a*) 1000*l.* from Dr. G. B. Longstaff, whose father, by his gift of a similar amount, was largely instrumental in founding the research fund forty years ago; (*b*) 1000*l.* from Mrs. and Miss Müller, in commemoration of the late Dr. Hugo Müller's long connection with the society; (*c*) 500*l.* from Dr. Alexander Scott, to mark his appreciation of the valuable work done by the research fund, and in commemoration of the seventy-fifth anniversary of the society. Prof. G. G. Henderson and Prof. A. Lapworth were elected new vice-presidents, and Mr. A. Chaston Chapman, Mr. C. A. Hill, Dr. R. H. Pickard, and Dr. F. L. Pyman were elected as new ordinary members of council. The delivery of the president's address, entitled "Our Seventy-fifth Anniversary," was postponed until to-day, April 6, at 8 p.m.

Sir Richard Redmayne, in his presidential address delivered recently before the institution of Mining and Metallury, took as his main theme a consideration of the mineral resources of the United Kingdom. Coal, as the most important mineral asset, came in for the principal treatment, which consisted in a survey of possible extensions of coal-fields and the prevention of waste in the acquisition and utilisation of coal. Iron ore and limestone were next reviewed, and, finally, the resources of non-ferrous metals, with the last of which the institution is by its constitution principally concerned. This gave the president the opportunity of explaining to members in some detail the scheme of research which is about to be undertaken by the institution in co-operation with the Royal Cornwall Polytechnic Society, and with the aid of a financial grant from the Advisory Council to the Committee of Scientific and Industrial Research of the Privy Council. The research will deal with the economic extraction of tin and tungsten from Cornish ores, and its objects are:—(*a*) To review the evidence upon which estimates of the total contents and recovery of tin and tungsten are based; (*b*) to co-ordinate and complete the researches already begun, and if necessary to institute other researches on new lines; and (*c*) to suggest new or improved methods of treatment indicated by the results of the researches. It is remarkable that in spite of the antiquity of this industry the precise percentage of recovery now being obtained of cassiterite from the tinstone is not known, though there is a consensus of opinion that it certainly does not exceed 75 per cent.

The name of Auguste Rosenstiehl, whose death is announced, is indissolubly linked to that period of chemistry which inaugurated the great colour industry. Born at Strasburg in 1839, he completed his studies in the university of his native town, where he remained as lecture assistant from 1857 to 1865. Having chosen the study of tinctorial chemistry as a career, he was appointed to the chair of chemistry at the technical school at Mulhouse, of which he was afterwards director. Subsequently he acted as colour chemist to a firm of dyers. In 1877 he accepted a post in the celebrated colour works of Poirrier and Dalsace, of Saint Denis, with which the names of Lauth, Gerard, Roussin, Bardy, and many other distinguished chemists are connected. It is to Rosenstiehl that the elucidation of the formation of fuchsine, discovered by Verguin, is due. He also studied the chemistry of alizarine and the other colouring principles associated with the madder root, among the derivatives of which nitroalizarin soon received practical application in the dyeing industry. In collaboration with Noelting, director of the School of Chemistry of Mulhouse, Rosenstiehl prepared Saint Denis red, an azo-colour which led the way to the manufacture of numerous derivatives of the same group. The chemistry of dyestuffs and dyeing were not the only subjects which absorbed Rosenstiehl's attention, for he was also interested in the study of physics and the physiology of colour. Later, Rosenstiehl was appointed to the chair of colour chemistry at the Conservatoire des Arts et Métiers. His views on osmosis, which he attributed to osmotic pressure, were confirmed some years later by Van't Hoff, who pointed out the analogy with gas pressure. Among the honours conferred upon him, the Academy of Sciences awarded him a few years ago the Jecker prize for his services to colour chemistry.

The prevalent belief that immature veal is far less nutritious food than beef is examined by W. N. Berg in a recent paper in the Washington Journal of Agricultural Research (vol. v., No. 15). He finds that no chemical difference of physiological importance can be detected between the two kinds of meat, nor does artificial digestion work more rapidly on beef than on veal, while kittens in the diet of which immature veal was the only source of nitrogen grew normally into healthy cats, the offspring of which, in their turn, throve also on the same food.

In a recent issue (February 3, p. 630) we alluded to the important part played by the Benedict calorimeter in the investigation of metabolism. A striking illustration of this is afforded in a recent publication by Prof. Benedict ("The Physiology of the New-born Infant," by F. G. Benedict and F. B. Talbot; Carnegie Institution of Washington, No. 233, 1915). Normal infants only have been studied so far as a preliminary to a more extended pathological investigation; the Boston Lying-in Hospital provided the material (100 babies), and a constant routine was adhered to in all cases. The data obtained show that on the first day of life there are important disturbances of the regulation of temperature which result either in a decreased metabolism, or, when the infant makes efforts to compensate for the loss of heat, there is increase in the metabolism. After the second day there is a fair uniformity in the heat production per square metre of body surface, and a remarkable uniformity per square metre of body surface per unit of length. This constancy is such as to permit the establishment of a factor which indicates that when the square metre as computed from the body weight is divided by the length, the metabolism per unit is 12·65 calories. The practical outcome of this is the following:—From a study of the effect of temperature changes on the basal metabolism and the amount of available breast secretion in the first week of life, it is possible to indicate what procedure should be adopted for the conservation of energy and supplemental feeding.

In the March number of the *Zoologist* Miss Frances Pitt discusses the habits of the yellow-necked mouse, both in a wild state and in captivity. One of its most striking characteristics seems to be its pugnacity. As she remarks, we have yet much to learn in regard to the range of this handsome mouse in England, but it occurs so far north as Northumberland, and is met with also in the Midlands. Miss Pitt seems to be under the impression that it is found only in the south and west of England.

In an account of his observations on the feeding habits of the purple-tipped sea-urchin (*Echinus miliaris*), which he contributes to the *Zoologist* for March, Mr. H. N. Milligan adds a number of new facts which are well worth recording. The diet of these animals ranges from bits of chalk to living fish and mollusca; nothing seems to come amiss to them. The cast shells of crustacea are eaten with the same avidity as the dead animal. When legs of crustacea are placed near them they are partly eaten, and the remaining portions are carried up by the tube feet and placed upon the back, to serve apparently as a disguise. How they discover and locate the position of edible morsels is yet unknown, but Mr. Milligan, by means of an ingenious experiment, has shown that they soon detect the introduction of food into the tank in which they are confined, and, furthermore, make strenuous efforts to seize it when it is placed out of reach.

A report on the chlorosis of the tobacco plant, generally known as "calico," is published by Mr. G. P. Clinton in the Connecticut Experimental Station Report for 1914. "Calico" is an infectious and, to a certain extent, a contagious disease which can be communicated by mere contact of calicoed plants or their juice with healthy plants. Infected plants in the seed-bed are probably primarily responsible for most of the calico in the fields. The disease is remarkable in appearing to be due, not to bacterial or fungoid agencies, but to an enzymic "virus." The virus can be filtered through a Berkefeld filter, and can be extracted from calicoed leaves by antiseptic solvents such as ether, chloroform, and alcohol, and the infected juice has its activity preserved by adding toluene. A number of precautionary measures are given for dealing with the disease and a useful bibliography of the subject.

Among the foreign guests of the British Association in Australia in 1914 was Dr. C. H. Ostenfeld, of Copenhagen, who has now published his observations on the vegetation of Western Australia (*Geografisk Tidskrift*, xxiii., 1915, pp. 35–46 and 132–48). He divides Western Australia into three climatic regions, each with a characteristic vegetation, tropical, central and north-west and south-west. The last region has the greatest rainfall, and is most important. It falls into three belts, depending on rainfall, which are named respectively the cattle, wheat, and timber belts, but since one or other species of eucalyptus characterises each belt of increasing rainfall from the interior to the sea, Dr. Ostenfeld proposes another and stricter classification into five belts. The Wandoo belt (*E. redunca*), with 450 to 700 mm. annual rainfall; the Jarrah belt (*E. marginata*), 700–1000 mm.; the Tuart belt (*E. gomphocephala*), about 900 mm.; the Karri belt (*E. diversicolor*), 1000–1200 mm.; and the coast scrub, with *Agonis flexuosa* and Acacia, on the sea cliffs. The Jarrah belt is the most important, not merely on account of its timber, but also for its cattle-farming and fruit-growing. The paper is well illustrated.

In the *Journal of the Royal Society of Arts* for January 28, a review of the work of the British Cotton-growing Association since its formation in 1902 is given by Mr. J. A. Hutton, chairman of the council of the association. To the activities of the association the successful cultivation of cotton in many parts of the Empire is due, and in particular Uganda, Egypt, and the West Indies may be cited. In Uganda the first export of cotton took place in 1904, when 54 bales were shipped, and in 1914 the shipment had risen to 40,000 bales. The transport facilities afforded by the Uganda Railway have made possible this successful cultivation, and in Nyasaland the extension of the Shire railway to Chindio, an enterprise largely helped by the association, will no doubt bring beneficial results to the cotton industry in the Protectorate. The association has made experiments in British colonies, both suitable and unsuitable, and has many failures to record, particularly in West Africa, where either conditions of climate were unsuitable or other crops were preferred by the native growers. In many colonies the association has been instrumental in hastening the formation of agricultural departments, with which it is now working in close harmony. Owing to the existence of the efficient Imperial Department of Agriculture in the West Indies, the Cotton-growing Association has been able to render very great help to the West Indian islands, and the cotton from that region is highly appreciated by the spinners in Liverpool.

A blizzard of unusual severity swept over the British Isles on March 27 and 28, causing a large amount of damage, both on land and sea, with some loss of life. In London the weather changes indicated the passage of a double-centred disturbance, or a parent storm and its subsidiary. The first disturbance reached its maximum force late on Monday evening, March 27, when the barometer in London fell below 29 in. The gale was from the south-west and was accompanied by heavy rain and snow. The wind had abated on Tuesday morning, but the barometer remained low. In the afternoon the mercury rose briskly and the wind shifted to the northward, blowing a severe gale in the early evening of March 28, with heavy, driving snow. On the morning of March 29 the barometer had risen an inch in the twenty-four hours. The velocity of the wind is given as 70 to 80 miles an hour in parts of England, and in London early on the evening of March 28 the rate was about 60 miles an hour.

Symons's Meteorological Magazine for March gives a rainfall table for February, 1916, which shows that the month was wet over nearly the whole of the British Isles, Aberdeen being the only station among those chosen for the tentative results with a deficiency of rain. The total rainfall during the month is said to have been most excessive in the south-east of England generally, the fall being more than double the average to the south of a line drawn from Hull to Cardiff. The greatest excess of rain at the given stations occurred in Derbyshire, the measurement at Mickleover being 289 per cent. of the average. At Bury St. Edmunds the fall was 273 per cent., at Launceston 271 per cent., and at Tenterden 258 per cent. of the average. The London rainfall at Camden Square was 208 per cent. of the average. Generally over England and Wales the fall was 193 per cent. of the average, in Scotland 150 per cent., in Ireland 160 per cent., and for the British Isles as a whole 170 per cent. The duration of rainfall in London was 90·9 hours, which is 51·9 hours above the average of the previous thirty-five years, and the greatest duration in February since records commenced in 1881. A map is given showing the Thames Valley rainfall, and from this it is seen how excessive the rains were. In Hampshire there is a considerable area with more than 6 in., and a large portion of the map shows the rainfall to have exceeded 5 in.

Part 5 of vol. iv. of the Science Reports of the University of Sendai, Japan, contains a paper on the daily variation of underground temperature by Mr. S. Satô, which shows the untrustworthiness of placing the recording thermometer in an iron pipe.

Mr. Sato used both mercury and platinum resistance thermometers in his pipes, and compared their records with those of similar thermometers placed directly in the ground at the same heights. He finds that the records of the thermometers in the pipes differ both in amplitude and in phase from those of the thermometers in the ground, and that the difference is due to the heat conductivity of the material of the pipe and to the convection currents in the air in the pipe. It persists when a poor heat conductor is substituted for iron and when the depth of the pipe is increased. As a result, almost all the values of the thermometric conductivity of soils deduced from observations of temperatures in pipes are too high.

Since the outbreak of the war it has been impossible to obtain the magnetite anodes which have played so important a part in electro-chemical industry, as all these were made in Germany. A note is contained in the *Chemical Trade Journal* of March 4 on the introduction of a substitute for these in the form of "duriron" anodes, made of an iron silicon alloy. Whilst this material is not entirely unacted on when used as an anode in copper sulphate solution, from fifteen to twenty times its weight of copper can be deposited before it is entirely corroded away. Duriron anodes have a higher mechanical strength than magnetite, but require about 13 per cent. more electrical energy to deposit the same quantity of copper. The extra power goes into heat, and special precautions have to be taken to avoid too high a rise in temperature.

A bold article by Mr. C. A. Jacobson on the need for a large Government institution for chemical research, which appeared in the *Journal of Industrial and Engineering Chemistry*, is reprinted in the *Chemical News* (vol. xliii, p. 101). The scheme outlined involves the creation of an institute of chemical research on a colossal scale, consisting of fifty major departments and one hundred minor departments, comprising about fifty buildings, a staff of 1350 trained workers, and an expenditure of more than a million pounds sterling per annum. A few years back such an idea would have sounded utterly utopian and impossible, but, in face of a war expenditure in this country alone every day of five times the amount called for each year by such a scheme, the outlay seems small if thereby supremacy were ensured "in a branch of science which is not only vital to constructive agencies, but even more so to destructive ones. The present European war teaches us that men and military training are of far less importance to success than a high development of the science of chemistry."

A recent issue of *The Engineer* (March 24) contains an account of the Medlow Dam, situated in a sandstone gorge on Adams Creek in the Blue Mountains of New South Wales. The dam is remarkable for its slender profile, having a base width of only 8·96 ft., tapering to 3·5 feet at a height of 29 ft., from which level the thickness remains unaltered to the coping at a height of 65 ft. The wall is of plain concrete, without reinforcement. Our contemporary compares it with the old Bear Valley Dam in California, which, with practically the same height, had a base width of 20 ft., and was generally much more substantial in design. The Medlow Dam is built to a curve of 60 ft. radius, and cost 2762*l*. The catchment area is 1150 acres, with an average rainfall of 39 in. The dam holds up a lake having a surface of 12 acres and containing 67 million gallons of water. By means of an inclined and adjustable off-let pipe the water is drawn off from the clearest stratum at the top.

The National Physical Laboratory has issued some notes on the production and testing of screw gauges, written by members of the staff of the laboratory, and based on their experience. The Whitworth thread has seven elements, error on any one of which may be sufficient to cause a gauge to reject work which ought to pass, or *vice versâ*. These elements are: Full diameter, core diameter, effective diameter, pitch, angle, form at crest, form at root. Of these, the most important, and the most difficult to control, are the pitch and effective diameter. The laboratory is issuing specially selected needles for use with the micrometer in testing the effective diameters of screws of 12, 14, 24, and 36 threads per inch. The methods of using these, together with special arrangements for holding the micrometer in the lathe, are described in the pamphlet. Triangular needles are used for testing the core diameter. There is also described an ingenious and cheap apparatus for testing the angle of the thread; this apparatus can be put together very easily in any workshop. The best way of obtaining correct pitches is to cut a screw in the lathe, using that part of the leading screw which is to be used in cutting the gauges, and to have its pitch measured from thread to thread at the laboratory. The pamphlet contains a great deal of useful information, and should be read by everyone interested in accurate screw cutting.

Prof. Karl Pearson, Galton Laboratory, University College, London, W.C., informs us that he has lately completed the corrigenda for his "Tables for Statisticians and Biometricians," published by the Cambridge University Press, and that the list is now bound with all exemplars of the tables. He wishes it to be known that previous purchasers of the work can obtain a copy of the corrigenda by sending a request for the same with a stamped envelope to Mr. C. F. Clay, Cambridge Press Warhouse, Fetter Lane, or to the secretary, Galton Laboratory, University College, London, W.C.

The following additional volumes have been arranged for, for inclusion in the "Fauna of British India" series (Taylor and Francis):—*Lycaenidae* and *Hesperiidae*, H. H. Druce; the *Curculionidae*, G. A. K. Marshall; the *Longicorn Beetles*, C. J. Gahan; the *Ixodidae* and *Argasidae*, C. Warburton; *Leeches*, W. A. Harding; the *Brachyurous Crustacea*, Lieut.-Col. A. Alcock; the *Apterygota*, *Termitidae*, and *Embiidae*, A. D. Imms; the *Diptera Brachycera*, E. Brunetti; the *Rutelidae*, G. J. Arrow; and the *Operculata*, by G. K. Gude.

Mr. Francis Edwards, 83 High Street, Marylebone, London, W., has issued a catalogue of Oriental books he is offering for sale. The works deal with the following among other countries of the Far East:—China, Japan, India, Burma, Tibet, and Persia.

OUR ASTRONOMICAL COLUMN.

Comet 1916*a* (Neujmin).—Copenhagen Postcard No. 12 gives an elliptic orbit for this comet, calculated by M. J. Braae, from observations covering nine days:—

Epoch, 1916, *January* 0·5, *G.M.T.* M_0 348° 50′ 21·2″.

$$\left.\begin{array}{l}\omega = 193^\circ\ 16'\ 2{\cdot}0''\\ \text{☊} = 327\ \ 20\ \ 4{\cdot}0\\ i = 11\ \ 5\ \ 34{\cdot}3\end{array}\right\}1916{\cdot}0 \qquad \begin{array}{l}\phi = 36^\circ\ 44'\ 33{\cdot}2''\\ \mu = 571{\cdot}493\\ \mathrm{Log}\ a = 0{\cdot}528664\end{array}$$

Period, 2267·74 days (6·21 years).

Perihelion passage, 1916, March 10·805 G.M.T.

The ephemeris calculated by Messrs. J. Braae and J. Fischer-Petersen from these elements is given in the following summary:—

From April 6, Greenwich midnight.

R.A., 9h. 36m. 7s., add for April 8, +3m. 31s.